



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

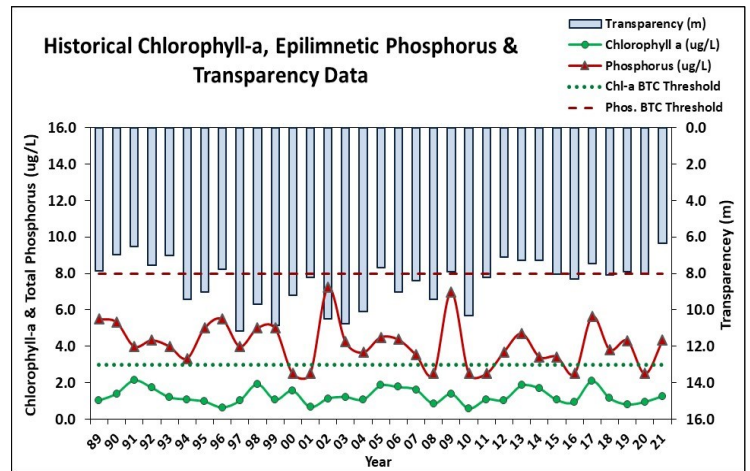
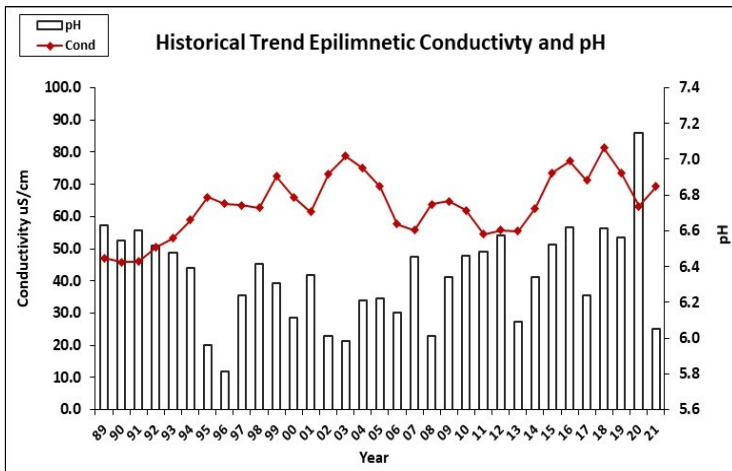
## GRANITE LAKE, STODDARD

### 2021 DATA SUMMARY

**RECOMMENDED ACTIONS:** Great job sampling in 2021! Lake quality remains representative of oligotrophic, or high quality, waters with low levels of nutrients (phosphorus) and algal (chlorophyll-a) growth. However, a cyanobacteria bloom was observed in the lake in 2020 and field data noted off-colored water conditions in 2021 but not visible surface blooms of algae or cyanobacteria. This highlights the delicate balance of the lake ecosystem and the sensitivity to changes in climate and water quality. July sampling followed a week of rainfall that resulted in high water levels and flows, however lake and tributary phosphorus and turbidity levels generally remained low which is a positive sign. Two sites, 58 West Shore Rd. and 305 North Shore Rd. were the exceptions and these sites experienced elevated phosphorus and turbidity warranting further investigation of pollution sources in these sub-watersheds. The increased frequency and intensity of storm events highlights the importance of continually managing stormwater runoff within the watershed by stabilizing dirt/gravel roads, stream banks and shorelines to minimize erosion and sedimentation during extreme storm events. If not already done, inventory culverts around the lake and prioritize culvert replacement to ensure properly sized culverts that can handle 100-year storm events on a regular basis. Encourage shoreline property owners to be certified LakeSmart through NH LAKES lake-friendly living program. Contact the VLAP Coordinator in 2022 to schedule a biologist visit to conduct dissolved oxygen/temperature profile and phytoplankton sampling. Keep up the great work!

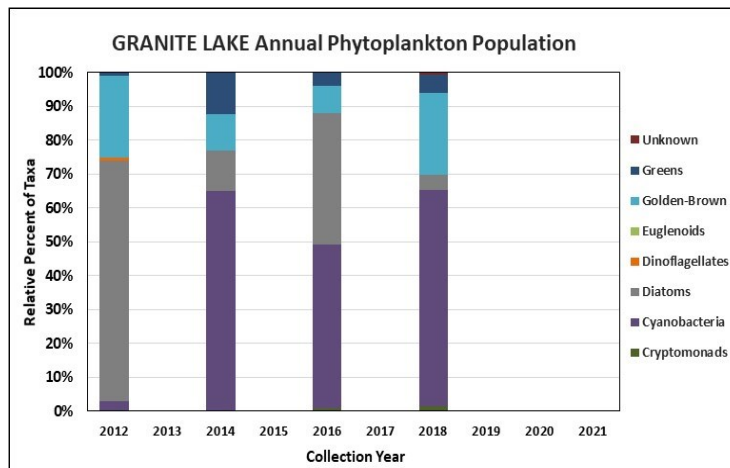
### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Parameter	Trend
Conductivity	Worsening	Chlorophyll-a	Stable
pH (epilimnion)	Stable	Transparency	Stable
		Phosphorus (epilimnion)	Stable



### DISSOLVED OXYGEN AND PHYTOPLANKTON

(Note: Information may not be collected annually)





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## GRANITE LAKE, STODDARD

### 2021 DATA SUMMARY

#### OBSERVATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll level was very low in July and increased slightly in August but remained within a low range. Average chlorophyll level increased slightly from 2020 and was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Deep spot, 603 GLR, Inlet, Outlet, and Towline Inlet conductivity and/or chloride levels were slightly greater than the state medians, yet less than a level of concern. However, historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began. 210, 305 and 395 NSR, North Shore End, North Shore West Shore, and Nye Meadow Outlet conductivity levels were very low and less than the state median. 586 GLR and Boat Ramp conductivity levels were slightly elevated. 58 WSR conductivity levels were greatly elevated and indicative of a potential pollution source.
- ◆ **COLOR:** Apparent color measured in the epilimnion indicates the water was clear, with little to no tea, or brown, coloring in July and then darkened to lightly tea colored, or light brown conditions in August.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and Hypolimnetic (lower water layer) phosphorus levels were very low in July and increased slightly in August but remained within a low range. Average epilimnetic phosphorus level increased from 2020 but was much less than the state median and the threshold for oligotrophic lakes. Historical trend analysis indicates relatively stable epilimnetic phosphorus levels since monitoring began. Metalimnetic, 395 NSR, 586 and 603 GLR, Boat Ramp, Inlet, North Shore End, North Shore West Shore, Nye Meadow Outlet, Outlet, and Townline Inlet phosphorus level fluctuated within low ranges for all stations. 210 and 305 NSR phosphorus levels were slightly elevated in August and the turbidity of the 305 NSR sample was also elevated. 58 WSR phosphorus level was greatly elevated in July following significant rainfall prior to sampling and the turbidity of the sample was also elevated.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was average in July and then decreased (worsened) greatly in August and field data noted the water was off-colored and clarity was poor. Average transparency decreased from 2020, remained higher (better) than the state median, yet was the lowest (worst) measured since monitoring began. Historical trend analysis indicates relatively stable NVS transparency since monitoring began, however it also indicates significantly decreasing (worsening) VS transparency since 2006.
- ◆ **TURBIDITY:** Deep spot, 210 and 395 NSR, 586 and 603 GLR, Boat Ramp, Inlet, Nye Meadow Outlet, North Shore End, North Shore West Shore, Outlet, and Townline Inlet turbidity levels were higher in July during high flow conditions and then decreased in August, but levels generally remained within a low range for those stations. 305 NSR and 58 WSR turbidity levels were elevated in July following significant rainfall for a week.
- ◆ **PH:** Deep spot, 210, 305 and 395 NSR, 58 WSR, 586 GLR, Boat Ramp, Inlet, North Shore End, Nye Meadow Outlet, Outlet, and Townline Inlet pH levels were slightly acidic and less than the desirable range 6.5-8.0 units. Historical trend analysis indicates stable, yet variable, epilimnetic pH levels since monitoring began. 603 GLR and North Shore West Shore pH levels were acidic and potentially critical to aquatic life.

Station Name	Table 1. 2021 Average Water Quality Data for GRANITE LAKE - STODDARD									
	Alk. (mg/L)	Chlor-a (ug/L)	Chloride (mg/L)	Color (pcu)	Cond. (us/cm)	Total P (ug/L)	Trans. (m)		Turb. (ntu)	pH
							NVS	VS		
Epilimnion	2.6	1.26	14	30	69.4	4	6.35	6.50	0.56	6.05
Metalimnion					76.4	6			0.62	6.08
Hypolimnion					78.4	4			0.62	5.78
210 North Shore Rd.					21.6	12			1.07	6.18
305 North Shore Rd.					17.6	11			7.39	5.88
395 North Shore Rd.					19.9	4			0.37	5.97
58 West Shore Rd.					557	81			26.50	5.69
586 Granite Lake Rd.					167.8	6			0.75	6.20
603 Granite Lake Rd.					68.8	4			0.72	4.50
Boat Ramp					147.2	8			1.17	5.93
Inlet			7		52.8	10			0.98	5.90
North Shore End					17.7	9			1.58	5.70
North Shore West Shore					15.2	4			0.42	4.89
Nye Meadow Outlet			12		29.6	12			1.09	5.36
Outlet In Stream					70.4	6			0.77	6.19
Townline Inlet			17		77.2	3			0.56	5.40

#### NH Median Values

Median values generated from historic lake monitoring data.

**Alkalinity:** 4.5 mg/L **Chlorophyll-a:** 4.39 ug/L

**Conductivity:** 42.3 uS/cm **Chloride:** 5 mg/L

**Total Phosphorus:** 11 ug/L **Transparency:** 3.3 m

**pH:** 6.6

#### NH Water Quality Standards

Numeric criteria for specific parameters. Water quality violation if thresholds exceeded.

**Chloride:** > 230 mg/L (chronic) **Turbidity:** > 10 NTU above natural

**E. coli:** > 88 cts/100 mL (beach)

**E. coli:** > 406 cts/100 mL (surface waters)

**pH:** between 6.5-8.0 (unless naturally occurring)